

Survey of science — a new decade begins

At the beginning of the 1990s what more astonishing sight than that of Eastern Europe, a year ago still isolated behind the iron curtain, standing on the verge of reintegration into the common European home of science. The changes in Europe and the Soviet Union, as well as the rapidly-growing importance of international cooperation (and competition) in science will set many of the big science policy issues of 1990.

The changes in the East

Europe

DESPITE the political reforms, material relief for Eastern Europe's impoverished scientific community has yet to arrive. In **Poland**, for example, where the 'semi-democratic' elections last June flooded the new two-chamber parliament with scientists and scholars (many of them former dissidents), Jan Janowski, the deputy premier with responsibility for science and technology, announced recently that the "coffers are empty" as far as applied research is concerned.

Research institutes that do not come under either the university network or the Academy of Sciences, he said, will sink if they cannot negotiate contracts with industry. Dozens of institutes could close in the next few months and research scientists seem likely to become the first sector of the community to seek the planned new unemployment benefits *en masse*.

Throughout Eastern Europe, scientists and university lecturers are generally paid at a far lower rate than trained industrial workers. Any wage rises in the coming year are unlikely to do more than mitigate the effects of soaring inflation. Foreign debts mean a lack of hard currency for foreign journals and equipment, and there are fears that foreign colleagues who have been generous with gifts and subscriptions in the past may naively believe that with the coming of democracy the problems of their Polish, Czech, Hungarian or East German colleagues will miraculously be solved. In fact, no immediate improvement can be expected, and, with relaxation of travel restrictions a major brain drain to the West is likely.

Hungary is already losing trained scientists at the rate of ten a day while East Germany is dangerously short of medical specialists. Not surprisingly, a number of eminent visitors to the West during the past few months have stressed the need not for charity but for an infusion of Western knowhow that will help create jobs for scientists and engineers.

Western participation in joint enterprises is now seen both as an important step to economic recovery and as a means of bringing Eastern Europe back into the world scientific and economic community.

East European participation in inter-

national scientific projects will almost certainly increase (East Germany, in particular, has its sights set on CERN, ESA, and Eureka). *Glasnost* will mean lifting secrecy on environmental issues, and new cross-border cooperation to deal with specific problems. In **Czechoslovakia**, Civic Forum has declared its opposition to the controversial Danube hydro-electric scheme, and has approached the Hungarians about creating an Austrian-Czechoslovak-Hungarian wetlands reserve.

In the formerly hard-line countries of **Bulgaria**, **Czechoslovakia** and **East Germany**, rehabilitation of independent-minded scientists and scholars expelled from their positions or censured by the Party is already under way. East Germany is revising the statutes of its Academy of Sciences, while **Poland** will almost certainly end the practice by which the learned secretary of its academy is a government appointee. And Czechoslovakia has set up a commission to enquire into allegations of abuse of psychiatry for the repression of political dissidents.

A possible source of funding for science and education throughout Eastern Europe would be the resources set free by defence cuts. 'Conversion' of military industry to the civilian sector is a current buzz-word in the Soviet Union, but it is unclear just how much this will affect the smaller Warsaw Pact countries. Unlike the Soviet Union, where military and civil research have always been sharply distinguished, the East European countries have encouraged the transfer of technology from the military to the civilian sector. And, although East Germany has the second-largest army in the Warsaw Pact, East German diplomats claim the country has virtually no military industry.

Romania, which had its breakthrough to democracy at the very end of the year, faces a particularly urgent problem. Its late 'Conducator' Nicolae Ceausescu and his wife the "world-ranking scientist and academician, Comrade Dr Elena Ceausescu DSc", during the past two decades had virtually annihilated fundamental research in Romania and yoked all applied research to the fulfilment of politically inspired planning. A massive rescue operation by Western science would seem to be in order. □

Soviet Union

TURMOIL, even constructive turmoil, is not good for science, and there is every

likelihood that the excitements of 1989 will be projected into the year ahead. To be in or near Moscow is absorbing, but inimical to peace of mind.

Lobbying has already begun for the elections to the Soviet Academy, likely in the spring, with Yu. A. Osipyan, the solid-state physicist, mentioned frequently as a likely successor to Gurii Marchuk, the present president. Whether election will bring reform of the academy's cumbersome organization is another matter.

In the year ahead, and perhaps for the first time, there will be a restraint on Soviet research that was hardly ever apparent in the past — a lack of funds. True, hard currency has always been in short supply, whence the appalling general shortage of up-to-date equipment, but now there are signs that even Aeroflot tickets to the West are hard to come by even when there is a willing host waiting at the destination. The chances are that the salaries of researchers will fall even further behind those of, say, taxi-drivers. □

International collaboration

US politicians no longer automatically say that American scientists must do big research projects on their own; whether it be the Superconducting Super Collider, the human genome or the Space Station, the cry is now for international collaboration.

But the problem is always that politicians are attracted to international collaboration because it is a way of saving US money. The moment it is suggested that foreign partners might themselves benefit from collaboration, then suddenly the talk is of others gaining a 'free ride' on US technological expertise.

Much of this is misunderstanding. US politicians do not understand that in most collaborative projects, foreigners participate by invitation because the US partners want access to foreign technical expertise. Times have changed — international collaboration is not a subterfuge by which foreigners gain the benefits of US science and technology at low prices.

The Space Station is the largest of all the collaborative projects. But 1990 may be the year in which the international partners finally abandon attempts to collaborate with the United States in space. When US